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24956	7590 07/22/2004		EXAMINER	
MATTINGLY, STANGER & MALUR, P.C. 1800 DIAGONAL ROAD SUITE 370			TORRES, JOSEPH D	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No	Applicant(s)				
Office Action Summary	10/067,335	KUWAMURA, NOBUHIRO				
emocritoden cammary	Examiner	Art Unit				
The MAILING DATE of this communica	Joseph D. Torres	2133				
Period for Reply	uon appears on the cover sheet wi	ur die correspondence address				
A SHORTENED STATUTORY PERIOD FOR THE MAILING DATE OF THIS COMMUNICA - Extensions of time may be available under the provisions of 3 after SIX (6) MONTHS from the mailing date of this communical of the period for reply specified above is less than thirty (30) of the NO period for reply is specified above, the maximum statute Failure to reply within the set or extended period for reply will. Any reply received by the Office later than three months after earned patent term adjustment. See 37 CFR 1.704(b).	ATION. FOR 1.136(a). In no event, however, may a recation. ays, a reply within the statutory minimum of thirt by period will apply and will expire SIX (6) MON by statute, cause the application to become AB	eply be timely filed y (30) days will be considered timely. THS from the mailing date of this communication. ANDONED (35 U.S.C. § 133).				
Status						
1) Responsive to communication(s) filed of	on <u>07 February 2002</u> .					
2a) This action is FINAL . 2b)	This action is FINAL . 2b)⊠ This action is non-final.					
•	Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.					
Disposition of Claims						
4) ☐ Claim(s) 1-12 is/are pending in the app 4a) Of the above claim(s) is/are 5 5) ☐ Claim(s) is/are allowed. 6) ☐ Claim(s) 1-12 is/are rejected. 7) ☐ Claim(s) is/are objected to. 8) ☐ Claim(s) are subject to restrictio	withdrawn from consideration.					
Application Papers 9) The specification is objected to by the E	iyaminer					
10)⊠ The drawing(s) filed on <u>07 February 2002</u> is/are: a)□ accepted or b)⊠ objected to by the Examiner.						
Applicant may not request that any objection	_	•				
Replacement drawing sheet(s) including the 11) The oath or declaration is objected to by	,	• • • • • • • • • • • • • • • • • • • •				
Priority under 35 U.S.C. § 119						
12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) All b) Some * c) None of: 1. Certified copies of the priority documents have been received. 2. Certified copies of the priority documents have been received in Application No 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received.						
Attachment(s) 1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO 3) Information Disclosure Statement(s) (PTO-1449 or PTO Paper No(s)/Mail Date	-948) Paper No(s	ummary (PTO-413))/Mail Date Iformal Patent Application (PTO-152) 				

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DETAILED ACTION

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Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: '206' in Figure 2; '408' in Figure 4; '510', '504', '506' & '507' in Figure 5; '816' in Figure 8. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abevance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

⁽b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. Claims 3-6, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Weng; Lih-Jyh (US 5321703 A).

35 U.S.C. 102(b) rejection of claims 3-6, 9 and 10.

Weng teaches a storage device (col. 1, lines 10-15, Weng) comprising: a recording medium (col. 1, lines 10-15, Weng); a head which reads data recorded on this recording medium (col. 1, lines 10-15, Weng); a channel which reproduces digital data from the read signal amplified by this amplifier (Processor 10 and Controller 11 in Figure 1 of Weng comprise a channel for reproducing digital data from the read signal); a data memory which stores a plurality of digital data read a plurality of times by said head and reproduced by said channel (col. 2, lines 1-10 in Weng teach that copies of encoded data are respectively read from a storage location on the storage device; the Abstract in Weng teaches that the data from each trial is decoded and saved); a comparator which compares the values of the same byte positions of said plurality of digital data extracted from said memory (col. 2, lines 31 and Figure 2 in Weng teaches a comparator function for comparing symbols in the same location of the repetitive copies of data for majority logic reconstruction of the original data), and issues error pointers that ascertain the error positions (The Abstract in Weng teaches that any of the symbols that is not sufficiently reliable is marked as an erasure for use in an error-and-erasure correction algorithm); a buffer memory which stores one or more digital data reproduced by said channel (col. 5, lines 47-52 in Weng teach that the Controller 11 in Figure 1 has a memory for storing read data); and a Reed Solomon error-and-erasure correction

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decoder (col. 4, lines 6-20 in Weng teach that the Processor 10 and Controller 11 in Figure 1 of Weng is a Reed Solomon error-and-erasure correction decoder).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- 1. Determining the scope and contents of the prior art.
- 2. Ascertaining the differences between the prior art and the claims at issue.
- 3. Resolving the level of ordinary skill in the pertinent art.
- 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 3. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weng; Lih-Jyh (US 5321703 A) in view of Armstrong; Alan J. et al. (US 5701314 A, hereafter referred to as Armstrong).

35 U.S.C. 103(a) rejection of claims 7 and 8.

Weng substantially teaches the claimed invention described in claims 3-6 (as rejected above).

However Weng does not explicitly teach the specific use of judging an error has occurred in the data in positions where these values differ even one time.

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The Examiner asserts that Weng teaches a threshold to determine whether each votedon symbol is sufficiently "reliable" (Abstract, Weng). Picking a specific value for the threshold encompassed by the teachings in the Weng patent based on obvious engineering design requirements such as desired error rate and throughput does not deviate from the scope or the intent of the teachings in the Weng patent.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Weng by including use of judging an error has occurred in the data in positions where these values differ even one time.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of judging an error has occurred in the data in positions where these values differ even one time would have provided the opportunity to determine whether each voted-on symbol is sufficiently "reliable" (Abstract, Weng) based on obvious engineering design requirements such as desired error rate and throughput.

4. Claims 1, 2, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weng; Lih-Jyh (US 5321703 A) in view of Armstrong; Alan J. et al. (US 5701314 A, hereafter referred to as Armstrong).

35 U.S.C. 103(a) rejection of claim 1.

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Weng teaches a storage device (col. 1, lines 10-15, Weng) comprising: a recording medium (col. 1, lines 10-15, Weng); a head which reads data recorded on this recording medium (col. 1, lines 10-15, Weng); a channel which reproduces digital data from the read signal (Processor 10 and Controller 11 in Figure 1 of Weng comprise a channel for reproducing digital data from the read signal); and a comparator which compares a plurality of digital data values in the same byte position obtained from said head by a plurality of readings (col. 2, lines 1-10 in Weng teach that copies of encoded data are respectively read from a storage location on the storage device and col. 2, lines 31 and Figure 2 in Weng teaches a comparator function for comparing symbols in the same location of the repetitive copies of data for majority logic reconstruction of the original data).

However Weng does not explicitly teach the specific use of an amplifier, which amplifies the signal read by this head.

Armstrong, in an analogous art, teaches use of an amplifier, which amplifies the signal read by this head (see Variable Gain Amplifier 22 in Figure 4 of Armstrong). Note:

Weng teaches a majority logic reconstruction method for use in a recording medium but does not teach the specifics of the recording medium whereas Armstrong does, hence one of ordinary skill in the art at the time the invention was made would have been highly motivated to combine the teachings of the Weng and Armstrong patents in order to enhance the error correction capabilities (col. 1, lines 67-68 in Weng).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Weng with the teachings of Armstrong by implementing

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the majority logic reconstruction method in a typical recording medium similar to the one presented in the Armstrong patent. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that implementing the majority logic reconstruction method in a typical recording medium similar to the one presented in the Armstrong patent would have provided the opportunity to enhance the error correction capabilities (col. 1, lines 67-68 in Weng).

35 U.S.C. 103(a) rejection of claims 2, 11 and 12.

Weng teaches a storage device (col. 1, lines 10-15, Weng) comprising: a recording medium (col. 1, lines 10-15, Weng); a head which reads data recorded on this recording medium (col. 1, lines 10-15, Weng); a channel which reproduces digital data from the read signal amplified by this amplifier (Processor 10 and Controller 11 in Figure 1 of Weng comprise a channel for reproducing digital data from the read signal); a data memory which stores a plurality of digital data read a plurality of times by said head and reproduced by said channel (col. 2, lines 1-10 in Weng teach that copies of encoded data are respectively read from a storage location on the storage device; the Abstract in Weng teaches that the data from each trial is decoded and saved); a comparator which compares the values of the same byte positions of said plurality of digital data extracted from said memory (col. 2, lines 31 and Figure 2 in Weng teaches a comparator function for comparing symbols in the same location of the repetitive copies of data for majority logic reconstruction of the original data), and issues error pointers that ascertain the

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error positions (The Abstract in Weng teaches that any of the symbols that is not sufficiently reliable is marked as an erasure for use in an error-and-erasure correction algorithm); a buffer memory which stores one or more digital data reproduced by said channel (col. 5, lines 47-52 in Weng teach that the Controller 11 in Figure 1 has a memory for storing read data); and a Reed Solomon error-and-erasure correction decoder (col. 4, lines 6-20 in Weng teach that the Processor 10 and Controller 11 in Figure 1 of Weng is a Reed Solomon error-and-erasure correction decoder). However Weng does not explicitly teach the specific use of an amplifier, which amplifies the signal read by this head or the specifics details of a Reed Solomon error-and-erasure correction decoder.

Armstrong, in an analogous art, teaches use of an amplifier, which amplifies the signal read by this head (see Variable Gain Amplifier 22 in Figure 4 of Armstrong) and a Reed Solomon error-and-erasure correction decoder (see Syndrome Generator 200, Erasure Location Value Generator 197, Decoder Circuit 199 in Figure 1 in Armstrong). Note: Weng teaches a majority logic reconstruction method for use in a recording medium using a Reed Solomon error-and-erasure correction algorithm but does not teach the specifics of the recording medium whereas Armstrong does, hence one of ordinary skill in the art at the time the invention was made would have been highly motivated to combine the teachings of the Weng and Armstrong patents in order to enhance the error correction capabilities (col. 1, lines 67-68 in Weng). Note also, Weng teaches a syndrome generator which produces a syndrome from the digital data stored in said buffer memory (Syndrome Generator 200 in Armstrong in Figure 1 of Armstrong); a

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decoder which produces an erasure-locator polynomial from said erasure pointers (Erasure Location Value Generator 197 in Figure 1 of Armstrong; Note: an Erasure Location Value Generator substantially produces an erasure-locator polynomial from erasure values received on line 192), and which produces a modified error-locator polynomial and an error-magnitude polynomial from this erasure-locator polynomial and said syndrome (col. 11, lines 63-67 in Armstrong teach that Reed-Solomon Decoder 199 in Figure 1 of Armstrong receives error location values from Erasure Location Value Generator 197 and syndromes from Syndrome Generator 200; col. 9, lines 57-67 in Armstrong teach that Reed-Solomon Decoder 199 produces an error-locator polynomial; Root Search & Error/Erasure Magnitude Generator 196 in Figure 1 of Armstrong produces an error-magnitude polynomial); and an error position generator which calculates errors from said modified error-locator polynomial and said errormagnitude polynomial (Root Search & Error/Erasure Magnitude Generator 196 in Figure 1 of Armstrong is an n error position generator which calculates errors from said modified error-locator polynomial and said error-magnitude polynomial). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Weng with the teachings of Armstrong by implementing the majority logic reconstruction method in a typical recording medium similar to the one presented in the Armstrong patent. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that implementing the majority logic reconstruction method in a typical recording medium similar to the one presented in the Armstrong

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patent would have provided the opportunity to enhance the error correction capabilities (col. 1, lines 67-68 in Weng).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (703) 308-7066. The examiner can normally be reached on M-F 8-5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

Joseph D. Torres, Phil